

Claims

1. A method of enabling two aircraft components to be joined together, the method including the steps of

providing a first aircraft component having a surface to be joined to a corresponding surface of a second aircraft component, the first and second components being so shaped that if joined there would be a gap defined between said surfaces of the first and second components,

providing a resin infusion system comprising a source of resin,

effecting flow of the resin from the source of resin into the gap by means of suction, thereby substantially filling the gap with resin, and

curing the resin.

2. A method according to claim 1, wherein the flow of the resin out of the gap is restricted by means of a barrier.

3. A method according to claim 2, wherein at least a part of the barrier is formed by a surface of the second aircraft component.

4. A method according to claim 2, wherein at least a part of the barrier is formed by a surface of the resin infusion system.

5. A method according to any of claims 2 to 4, wherein the barrier is, during the filling of the gap with resin, removably fixed in position relative to the first aircraft component.

6. A method according to claim 5, wherein the barrier is fixed to the first aircraft component by means of a pressure difference.

7. A method according to claim 6, wherein a single vacuum pump is used both to cause the pressure difference and to provide the suction that draws the resin into the gap.

8. A method according to of claims 2 to 7, wherein the resin is

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cured whilst between the first aircraft component and the barrier.

9. A method according to claim 8, wherein after the resin is cured the first component and the barrier are separated.

10. A method according to any of claims 2 to 9, wherein a surface of the first aircraft component is prepared so that the adherence of the resin to that surface is improved, a surface of the barrier is prepared so that the adherence of the resin to that surface is reduced to facilitate separation of the barrier from the resin once cured.

11. A method according to any preceding claim, wherein the method includes a step of joining the second aircraft component to the first aircraft component, after the resin has cured.

12. A method according to any preceding claim, wherein a filter is provided to hinder flow of the resin out of the gap.

13. A method according to any preceding claim, wherein the first aircraft component includes at least one aperture arranged so that the suction is provided via said at least one aperture.

14. A method according to claim 13, wherein the resin enters the aperture, and the method includes a step of remachining the aperture after the resin has cured.

15. A method according to any preceding claim, wherein the curing of the resin is effected by cold curing.

16. A method according to any preceding claim, wherein the first aircraft component is formed of a composite material

17. A method according to any preceding claim, wherein the cured resin forms a shim.

18. Shim forming apparatus including a jig for receiving and positioning a first aircraft component relative to a second aircraft component, the apparatus further including a resin infusion system including a suction pump and a source of resin, the apparatus being so arranged that in use a gap defined between

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the surface of the second aircraft component and the first aircraft component may be filled with resin to form a shim.

19. Shim forming apparatus including a moulding tool having a surface shaped to receive a first aircraft component such that a gap is present between the surface of the moulding tool and the first aircraft component, the surface of the moulding tool being shaped to correspond to the surface of a second aircraft component, the apparatus further including a resin infusion system including a suction pump and a source of resin, the apparatus being so arranged that in use the gap between the surface of the moulding tool and the first aircraft component may be filled with resin to form a shim.

20. Shim forming apparatus according to claim 19, wherein the moulding tool has a portion that in use is able to sealingly engage with a portion of the first aircraft component, to define a sealed region, which is connectable to a suction pump so that in use suction may be applied to the region, thereby holding the first aircraft component in a fixed position relative to the moulding tool.

21. Shim forming apparatus according to claim 19 or claim 20, wherein the apparatus further includes a vacuum bag that is attachable to the moulding tool and which, in use, enables suction to be applied to the moulding tool to draw resin from the resin source into the gap.

22. A moulding tool suitable for use in a shim forming apparatus, the moulding tool having a surface shaped to receive a first aircraft component such that a gap is present between the surface of the moulding tool and the first aircraft component, the surface of the moulding tool being shaped to correspond to the surface of a second aircraft component, the moulding tool being so configured that it may be arranged so that a gap formed between the surface of the moulding tool and such a first

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aircraft component may be filled with resin to form a shim.

23. An aircraft component and shim formed thereon, the shim having been formed by performance of the method of claim 17, by the use of the apparatus of any of claims 18 to 21 or by the use of the moulding tool of claim 22.

24. An aircraft structure including a first aircraft component connected to a second aircraft component, there being a shim interposed between the first and second components, the shim having been formed by performance of the method of claim 17, by the use of the apparatus of any of claims 18 to 21, or by the use of the moulding tool of claim 22.

25. An aircraft including an aircraft structure according to claim 24.